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## EVALUATING TEACHER EDUCATION – A SYSTEMS APPROACH

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In the discussion which follows, an effort will be made to describe a basis for evaluating vocational teacher education within the context of a university. A system, as used in this discussion, is any process or function whose elements (subsystems or supersystems) operate with relationships that are known or can be determined.

The broad categories of evaluative focus, as used in this discussion, are context, input, process, and product.<sup>1</sup> These categories also help to identify the nature of the system, its interactive elements, and some of its flow characteristics. An elaboration of these categories with their application to evaluating vocational teacher education is the center focus of this discussion.

### Context Evaluation

It is possible to look at any process or function, such as career and vocational teacher education, as a system involving a number of subsystems or component parts. These subsystems or components interact to yield an output, in this instance the quality and quantity of instructional intervention into vocational and career education. The essence of any system is the interrelationship and interdependency of its component parts. But the nature of the interaction process is not guided solely by the internal dynamics of the system. It is also effected by the flow of initiative into the system, the bureaucratic controls surrounding the system, and the conditions which determine the resources available to the system. As one views these other factors, it is necessary to look beyond the system to the supersystems; those institutions, agencies, or forces which establish conditions effecting the system output. Career and vocational teacher education has enormous influence from such supersystems. It is an important part of its context and a basis for context evaluation.

In a university setting, the most important element of context is the explicit or implicit mission of the university. In broadest terms the mission of the university involves a dedication to the survival of present and future generations with an improvement in the quality of life. To implement such a mission a university conducts programs of disciplined inquiry to discover, test, disseminate, and preserve knowledge and values, and it conducts programs of instruction which are indigenous to and nurtured by programs of inquiry in order to develop competent and committed individuals and groups.<sup>2</sup> The structural procedure involves the organization of a community of learning (faculty, students, and

staff) in an environment which provides the academic freedom essential for the exercise of responsibility and accountability to society.

The above can easily become soaring rhetoric unless there is direction and focus to the university mission. The need for such focus in higher education was summarized in a conference held by WICHE (Western Interstate Commission for Higher Education) as follows: Planning at any level should be within the context of current and projected social and economic characteristics of the state and nation. This includes consideration of such factors as long-term occupational trends, advances in technology, and like matters.<sup>3</sup> This can also become soaring rhetoric unless someone examines its significance in relating the role of vocational teacher education to the mission of universities in which such programs occur.

How does one examine the university context of career and vocational teacher education? What observations can be made which expose and illuminate the acceptable boundaries of institutional commitment affecting this field? Several are enumerated below:

1. The university should be responsible, indeed accountable, so that the choices and decisions it makes concerning its programs are, in fact, the ones which give the greatest promise of achieving its mission. Even if the mission of the university is expressed in broad and general terms, the mere inclusion of a vocational teacher education program implies a responsibility to justify it and to test its validity as an expression of its mission. The absence of the acceptance of such a responsibility implies a fragile context for career and vocational teacher education.
2. The obligation of universities to focus on the interaction of teaching and inquiry is a special and unique one. This obligation describes the character of universities which distinguishes them from trade schools or single-purpose colleges. Scholars in other types of institutions may conduct individual research in order to enrich their teaching or to advance their professional status. The argument here concerns the institutional context and not the individual role. Universities accept a research mission as an institutional function to accomplish an overall mission and they allocate major resources to support research in order to enhance the interaction of teaching and inquiry.

The intent of such resources available to career and vocational teacher education is a measure of the commitment of the institution to the field.

3. By definition, universities are universal institutions. They have been criticized for laxity in addressing themselves to various interpretations or universality-geographic, cultural, and occupational. Included in the criticism is the charge that they are accessorial to a cultural bias which confuses upper class attributes with intelligence, that they embrace programs addressed mainly if not exclusively to the upper ranges of the occupational hierarchy, and that their search is for genteel, not genuine, answers to the question — what shall be taught and learned? To the degree that such criticisms are justified, vocational teacher education often finds itself functioning in an unfavorable context. As a field it addresses itself to the entire range of the occupational hierarchy and it cannot afford the luxury of an instructional context with a limited review of the concept of universality.
4. The context of career and vocational teacher education is also influenced by the **control** exercised over the institutions in which such programs are found. The control, often referred to as political, is more often bureaucratic. It is likely to be of two types. First, the existence of other levels or types of educational institutions in a state will increasingly limit resources and test the congruence of the goals of the university with the needs of the state. Second, the central role of planning for governance will diminish each institution's room for maneuvering within the boundaries of its preferred mission. Responsiveness to this control can expand or limit the institutional commitment to career and vocational education and, thus, to the status of its context for teacher education in the field.

The foregoing observations regarding the context of career and vocational teacher education can be further expanded and elaborated. Hopefully, these are sufficient to illustrate that a vocational teacher education

program can be a fragile appendage to the mission of the university or it may be a central and durable feature. The interpretation of the mission of the institution will determine whether it behaves like a public utility dispensing contractual services in the form of teacher education or as a public trust for inspiring teaching and inquiry in the field. It will also determine whether the institution can exercise leadership or merely attempt to give some training on it.

Context evaluation is exceedingly important, but it is also very imprecise. It has no convenient measures or indexes. Yet it must be done and, like other approaches to evaluation, it is done to improve decisions. Decisions to expand or terminate teacher education programs at institutions or to eliminate institutions from consideration as possible sites are often made by examining context. Decisions to alter teacher education programs are likewise easier if preceded by a careful examination or review of its context elements.

### Input Evaluation

Input evaluation is closely related to context evaluation since context is almost always an aspect of input. It may actually commence before the process of teacher education is underway. Input evaluation attempts to identify the inputs necessary to the process and to resolve the questions about the appropriate mix of inputs.

Among the premises serving as a basis for this discussion is the assertion that the most costly and the most valuable resource invested in the educational enterprise is **student time**. Calculated as opportunity costs (value of alternative uses of time) either as foregone earnings or minimum wage-rate equivalents for time invested in education, student time exceeds all of the other combined costs of education. Traditionally, educational institutions have regarded student time as having zero or near-zero value. The demand for accountability has led institutions to begin accounting for budgeted costs, faculty time, and space, but rarely for student time. Accepting the premise that student time is a valuable and costly resource, an assessment of the amount and relevance of student time invested in teacher education is the most important aspect of input evaluation. Essential data would include the following:

- (a) Student time losses related to program administration including registration, traveling to and from classes, paying fees, completing residence requirements, making various applications (student-teaching, admission, graduation, etc.) examinations, and interviews.
- (b) Student time losses related to instruction including problems in class schedules, inefficient course modules, overlapping content, prerequisites employed for screening rather than needed prior knowledge, interrupted sequences, and irrelevant remediation.

The second major feature of input evaluation involves the function of **planning**. The acceptable evidence here is not the existence of a plan

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for career and vocational teacher education, but the evidence of the use of alternative plans to improve the decision process. Planning is a process of choosing or creating alternative futures. It projects alternative decisions into the future as a basis for improving present choice. By examining the future consequences of presently available decisions, it helps to identify the data needed for present and future choices. Planning is a process of improving decision-making, and, thus, an important aspect of input evaluation.

A third aspect of input evaluation may be referred to as the **student-faculty environment**. This is the "community of learning" mentioned early as an essential element of context. This includes aspects of governance, its organization and execution; the relationships with the community; the procedures available for faculty and student evaluation; and the existence of follow-up procedures to assess the degree to which the mission is, or can be, accomplished. Input evaluation is a measure of the extent to which an institution has "tooled up" to carry out its mission as well as committed itself to do so.

### Process Evaluation

Process evaluation is undertaken to provide **decision-oriented** information for decisions relating to a program's conformity to design (formative evaluation), and to establish a record of the flow characteristics for the inputs to the program and their consequences.

As implied earlier, vocational teacher education is defined as a system of intervention designed to improve the process of career and vocational education. If teacher education can be regarded as a system of intervening forces, then it is necessary to obtain information by raising such questions as through whom does intervention occur? How does it occur? Where? What is improved by the intervention? Teacher education institutions seldom raise these questions as a source of information to guide or evaluate processes.

Following are some tentative answers to these questions.

- A. Through whom does intervention occur?
  1. Students - undergraduate or graduate, pre-service or in-service students preparing for teaching roles.
  2. Intra-institutional groups — including student and faculty committees for governance or planning.
  3. Inter-institutional groups — involving planning, accreditation and other forms of collaboration.
  4. Agencies of governance - including local, state, and federal education agencies.
  5. Professional organizations — particularly teacher's organizations.
  6. Non-governmental agencies of the community — including business, industry, and commerce.
- B. How does intervention occur?
 

Intervention occurs through the individuals or instrumentalities described in

"A" above by establishing appropriate relationships between teaching and disciplined inquiry. More commonly it is viewed as:

1. Instruction — undergraduate, graduate, in-service, etc.
  2. Research - disciplined inquiry of all types.
  3. Service and consultation.
- C. What is improved by the intervention?
    1. Program goals and objectives.
    2. Organization and administration of programs.
    3. Management — including assessment of needs and accountability.
    4. Instruction
    5. Planning
    6. Research and development
  - D. Where does intervention occur?
    1. Local education agencies
    2. State education agencies
    3. Federal education agencies
    4. Community organizations and agencies
    5. Other teacher education institutions

The single and incomplete outline above describes the major processes in teacher education. The responses to the first question (through whom?) identify the clientele in the teacher education processes. The second question (how?) and its responses identify the normative processes for achieving the overall mission. The third question (what is improved?) and its responses identify the main elements of the curriculum in career and vocational teacher education as well as the focus of disciplined inquiry. The fourth question (where?) and its responses identify the location of the ultimate impact of the intervention.

The processes of teacher education can be described in both quantitative dimensions (time and other resources invested) and in qualitative dimensions (scope, intensity, and balance of intervention). Teacher education institutions achieve their identity through their processes. Those engaging in continuous process evaluation tend to refine the validity of their missions and they establish themselves as important parts of the programs into which they intervene.

### Product Evaluation

The general approach to product evaluation involves the development of operational definitions of program objectives, the identifications of criterion measures which are identical to and analogous to the objectives, a comparison of these measures with the defined objectives, and finally the making of interpretations and decisions regarding these comparisons. The information used for product evaluation includes the information made available in context, input, and process evaluation.

Product evaluation ascertains whether the objectives were or were not achieved. Combined with process evaluation, the information includes procedural reasons why they were or were not achieved. Context and input evaluation assembles the information which describes the specifications of the system and prevents

the evaluation from becoming a pro forma process. Context, input, and process evaluation is seen, thus, as important feedback mechanisms for the entire process of evaluating career and vocational teacher education.

An important step in product evaluation is the establishment of operationally detailed objectives. It is an axiom of education that objectives should be clearly defined. But definition is never the central issue; finding objectives with significant educational utility is a more difficult and crucial task.

The objectives of career and vocational teacher education are almost wholly instrumental; their value is in what they generate or facilitate in the educational system existing outside of the teacher education institution. It is necessary, accordingly, for product evaluation to include activities which are in close proximity to the scene where teacher performance occurs.

Nor is it less difficult to identify criterion measures which determine the achievement of objectives. Only when the search for objectives has been superficial is it possible to find many criterion measures which are identical to the objectives of teacher education. Most often it is necessary to employ measures (academic records, tests, background experience, performance estimates, etc.) which can be regarded as somewhat analogous to the objectives of vocational teacher education. Criterion measures may be viewed, thus, as a mere sample of analogues employed in estimating the congruity between educational performance and educational objectives. The search for objectives and their analogues as well as the refinement of the tests of congruity between them is a further goal of the evaluation process.

Product evaluation may include many outcomes which are not ordinarily referred to as products. It may include the following:

- (a) The relationship of teacher education to planning or need assessments in the field of career and vocational education.
- (b) Nature and importance of competencies possessed by students and faculty in relation to the purposes of such competency.
- (c) An assessment of instruction — its content, scope, sequence, and its intensity in relation to instructional management alternatives in schools.
- (d) The relationship of disciplined inquiry to teacher education and to vocational education.

This brief list is illustrative of the scope of objectives embraced by product evaluation.

### Concluding Comment

This discussion has proposed some specifications for a system of evaluation which can inform the decision process by its numerous opportunities for information feedback. It proposes and advocates an information base for the context, input and process elements of vocational teacher education. Finally, it described as "product evaluation" the traditional approach to determining the match or mismatch between performance vs. objectives and it introduced some cautions related thereto.

### Notes

<sup>1</sup>This 4-element approach is similar to the CIPP model described in Chapter 5 of **Educational Evaluation and Decision Making**, (Stufflebeam, D., et al.), Research Publishers, Itasca, Ill., 1971.

<sup>2</sup>The description of an acceptable university mission is adopted from **Toward 1985**, Senate Committee on Long Range Planning, Univ. of Minn., 1972.

<sup>3</sup>Western Interstate Commission for Higher Education, **Long Range Planning**. Boulder 1965.

## NEW FACULTY MEMBER



Dr. Gary Leske

The Visitor welcomes Dr. Gary Leske back to the University of Minnesota as an Associate Professor in the Department of Agricultural Education.

Dr. Leske taught vocational agriculture in New Richland, Minnesota from 1962 to 1966. He returned to the University of Minnesota where he received his Ph.D. in 1970 and took a position as assistant professor in the Agricultural Education Department at South Dakota State University in Brookings, South Dakota.

Gary will be responsible for the teacher preparation in the areas of supervised experience programs and related agricultural education programs.

Dr. Leske and his wife Karen with their daughters Natalie and Kathie are in the process of locating suitable housing in the Twin Cities. The Department of Agricultural Education is happy to have them join the University community.